Data Cloud Pilot Project
STATEMENT OF WORK (SOW)

BACKGROUND

The NASA Goddard Space Flight Center (GSFC) is home to the nation's largest organization of combined scientists, engineers, and technologists that build spacecraft, instruments, and new technology to study the Earth, the sun, our solar system, and the universe.   As the space exploration landscape has changed and competition for new work increases, understanding and strengthening Goddard's competitive advantage has become ever more critical. In this new and changing environment, information technology (IT) has become a strategic asset for growth by supporting the capabilities that make Goddard unique.

In April 2008, ITCD leadership recommended a transformation of the IT organization on the basis of inputs from across the Center. The transformation created a collaborative and federated management environment to support evolving Center IT requirements. It formed the basis for the partnership between ITCD and other Goddard organizations that continues today and represents the foundational steps in managing IT as a strategic asset.

In a continuation of these earlier transformation efforts, in 2011 Goddard's OCIO worked with stakeholders across the Center to obtain buy in on advancing scientific research utilizing innovative and leading edge Cloud Computing technologies.   The following statement of work defines the tasks to develop and implement a unique science Data Cloud environment, leveraging existing NASA cloud infrastructure to pilot and stand up an optimized environment to harness and leverage science data and perform experiments to define future capabilities. The tasks are to be completed by a uniquely constructed contract team of technologists, scientists, and engineers.

OBJECTIVES

The contractor shall work with key stakeholders to provide and perform evaluation, technical management and collaboration services to architect, develop and implement a test environment for Data Cloud Services, for GSFC, including:

- Evaluate, identify and specify appropriate GSFC resources and computing assets that are required to be available for successful implementation of the Data Cloud Pilot Project.
- Utilize technical and scientific analysis to architect, design and allocate the data cloud pilot service infrastructure as determined by the functional requirement of the pilot customers.
- Evaluate existing science information systems, experiments, applications and processes for viability in and portability to the pilot data cloud environment.
- Develop and execute a strategy to move project data/systems to the appropriate NASA Cloud platform and develop a logical functional, intuitive interface for secure accessibility to project data/systems.
- Develop a cost model for chargeback use in the Cloud environment.

- Upon completion this environment will be an agile operating capability that enables and sustains experiments by the GSFC Science Community.

TASKS

The contractor solution shall be developed using an agile and accelerated delivery method, and velocity analysis shall be used to monitor and throttle development efforts to maintain adherence to project milestone and timelines.

- Work with GSFC key stakeholder to ensure clarity and knowledge of project strategy, approach and goals.
- Provide and maintain a detailed Project Plan including Work Breakdown Structure (WBS) and timeline that shall serve as the framework for contract planning, budgeting, cost reporting and schedule status reporting to the Government.
- Review all project tasks and optimize task in accordance with specific feedback from GSFC IT Governance review and recommendations. Project task revision shall be assessed to ensure compliance with project goals and evaluated against critical project milestones.
- Conduct functional and performance testing for the elements of the data cloud pilot environment.
- Participate in bi-weekly Contract Management Reviews (CMRs) to status the contractor's financial and technical activities under the contract. Content of CMRs shall include: technical issues and accomplishments, analysis of cost and schedule performance data and review of corrective action plans.
- Develop and implement a Data Management Plan that shall describe the management, preparation, control and dissemination of data required under this contract, and shall define an integrated approach for data management including management of documentation.
- Maintain, operate and secure data and software systems, which provide for the management, collection, preparation, publication, control and dissemination of information and technical data required by this contract.
- Develop and implement a Risk Management Plan (including risk assessment).
- Develop and implement a Performance Measurement System (PMS) that shall detail clearly defined metrics and the correlation of those metrics to the experiment data. Additionally, the PMS shall define specific measurements of the contract requirements and management effectiveness.

MILESTONES/DELIVERABLES
- Define and document requirements
- Compute infrastructure resource allocation
- Conduct cloud application and tool analysis
- Performance testing/reporting, including lessons learned
- Conduct Benefit Analysis, including cost model recommendations

PERIOD OF PERFORMANCE

90 days from contract award

PLACE OF PERFORMANCE

Goddard Space Flight Center

TRAVEL

None

UNIQUE REQUIREMENTS AND CONSIDERATIONS

The contractor shall be proficient and experienced in the following:
- Certified Agile & Scrum experts
- On-demand provisioning and consumption of IT services
- Public and private cloud deployment, including EC2, Google, Azure, etc.
- Open source & enterprise web, application and database servers
- Customized scientific cloud deployment models
- Computer networks
- Hadoop certified
- NIST and FISMA certified
- Automated Testing Services for performance/stress testing (both hardware and software)